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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/815,816	03/23/2001	Shih-Jong J. Lee	SV10	6695
29738	7590	07/01/2004	EXAMINER PATEL, SHEFALI D	
SHIH-JONG J. LEE 15418 SE 53RD PLACE BELLEVUE, WA 98006			ART UNIT 2621	
			PAPER NUMBER 6	

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/815,816

Applicant(s)

LEE ET AL.

Examiner

Shefali D Patel

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6, 13 and 19 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 7, 8, 11, 12 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment was received by fax on April 13, 2004.
2. Amendments to the specification and drawings have been accepted.
3. Claims 3, 5, 9-10, 14-18, and 20 have been cancelled.

Response to Arguments

1. Applicant's arguments, see remarks (pages 13-17), filed on April 13, 2004, with respect to the rejection(s) of claim(s) 1-2, 4, 6-8, 11-13, 19, and 21 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Waldo, III et al. (US 5,469,263) and Koljonen (US 5,982,927).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 7-8 and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Koljonen (US 5,982,927).

With regard to **claim 7** Koljonen discloses a method of locating a detected mark's position in an image (col. 10 lines 8-20) comprising: a. creating a gray scale image of at least one mark (gray scale image of the mark (i.e., solder on the solder pad) is being processed at col. 13

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lines 20-27); b. masking portions of the image based upon detected mark elements (masking at col. 13 lines 16-20); c. estimating mark position using a structure guided estimation process (obtaining mark position at col. 13 lines 8-15).

With regard to **claim 8** Koljonen discloses detected mark elements determining the constraints applied to the structure guided estimation process at col. 13 lines 30-47 by referring to the on-pad and off-pad structure difference.

With regard to **claim 11** Koljonen discloses a weight image to emphasize particularly important or definitive portions of the mark by emphasizing the scale of lighting, type of the paste (for the solder), board color, etc. at col. 13 lines 48-56.

With regard to **claim 12** Waldo discloses the weight image is being learned where the image is being learned by the use of imaging device 20 as seen in Fig. 1 and at col. 6 lines 22-24.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waldo, III et al. (US 5,469,263) (hereinafter, "Waldo").

With regard to **claim 1** Waldo discloses a method for detecting the mark in an image (col. 2 lines 21-37) comprising: a. obtaining an image of at least one mark (image of the mark 19 taken by an imaging device 15 as seen in Figure 2, See, col. 2 lines 55 to col. 3 lines 1-4); b.

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locating the center of each mark based on symmetry (center is located based on symmetry as disclosed at col. 3 lines 13-15, 37-48); c. processing the mark image using at least one (directional elongated) filter (See, col. 4 lines 27-36 where a filter is applied to the image of the mark for processing); d. rejecting artifacts based on symmetry (eliminating components that lack the spatial period used to define the symmetry of the image, col. 4 lines 33-35 and 56-66).

Waldo discloses filtering out the components that lack the spatial period, col. 4 lines 33-39 and does not expressly disclose directional elongated filter. It would have been obvious matter of design choice to modify the Waldo reference by having directional elongated filter since applicant has not discloses that having directional elongated filter solves any stated problem (pages 4-5 of the specification) or is for any particular purpose (other than to eliminate noise) and it appears that the spatial filter would perform equally well with processing the mark image and rejecting artifacts based on the symmetry (as disclosed in Waldo at col. 4 line 27 to col. 5 lines 1-10).

With regard to **claim 4** Waldo with reference to a design choice discloses at least one parameter of the directional elongated filter is determined by learning (obtaining the direction and location of the mark 19 as disclosed at col. 3 lines 1-8).

With regard to **claim 21**, Waldo discloses all of the claimed subject matter as already discussed above in claim 1 and the arguments are not repeated herein, but are incorporated by reference. Claim 21 distinguishes from claim 1 only in that it recites determining at least one parameter of the mark through a learning process. Waldo discloses obtaining the direction and the position/location of the mark 19 at col. 3 lines 1-8.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Waldo (US 5,469,263) in view of Ina (US 4,886,974).

With regard to **claim 2** Waldo discloses obtaining the mark depending on the direction and the location as discussed above in claims 1 and 4. Waldo does not expressly disclose a step of classifying mark type. Ina discloses this as a prior art at col. 1 lines 33-45. Waldo and Ina are combinable because they are from the same field of endeavor, i.e., detecting a mark position with its center. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Ina with Waldo. The motivation for doing so is to obtain the positional information as disclosed in Ina at col. 1 lines 40-42 and 44-45. Therefore, it would have been obvious to combine Ina with Waldo to obtain the invention as specified in claim 2.

NOTE: Ina also discloses feature (i.e., mark) extraction step at col. 4 lines 30-33 and col. 5 lines 30-33.

Allowable Subject Matter

7. Claims 6, 13, and 19 are allowed.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 4,707,647; US 5,341,228.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shefali D Patel whose telephone number is 703-306-4182. The examiner can normally be reached on M-F 8:00am - 5:00pm (First Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


DANIEL MARIAM
PRIMARY EXAMINER

June 23, 2004

Shefali D Patel
Examiner
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